

CLAIMS

What is claimed is:

- 1 1. A self-booting software defined radio (SDR) module that interfaces with a
2 host system, said module comprising:
3 a modulation/demodulation section with a stored run-time kernel, wherein a
4 processing unit of said modulation/demodulation section executes said run
5 time kernel;
6 an interface mechanism coupling said host system to said module, wherein
7 said host system provides a set of reconfiguration information; and
8 a front end unit receiving communications signals and processing said
9 communications signals using said reconfiguration information.
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- 1 2. The self-booting software defined radio (SDR) module according to claim
2 1, wherein said modem/demodulation section comprises a memory unit.
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- 1 3. The self-booting software defined radio (SDR) module according to claim
2 2, wherein said memory unit is selected from the group comprising: FLASH
3 memory and RAM.
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- 1 4. The self-booting software defined radio (SDR) module according to claim
2 1, further comprising a multi-port crossbar coupled to said front end unit.
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- 1 5. The self-booting software defined radio (SDR) module according to claim
2 1, modulation/demodulation section further comprises a high speed fabric.
3
- 1 6. The self-booting software defined radio (SDR) module according to claim
2 1, wherein said communications signals are selected from a plurality of formats
3 selected from the group comprising: Code Division Multiple Access (CDMA),
4 Time Division Multiple Access (TDMA), Global System for Mobilization (GSM),

5 Cellular Digital Packet Data (CDPD), DataTac, Mobitex, General Packet Radios
6 Service (GPRS), and Personal Communication Service (PCS).

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1 7. The self-booting software defined radio (SDR) module according to claim
2 1, wherein said interface mechanism is a plug-and-play selected from the group
3 comprising Peripheral Component Interconnect (PCI), Universal Serial Bus (USB),
4 and IEEE 1394 Firewire, TCP/IP.

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1 8. The self-booting software defined radio (SDR) module according to claim
2 1, wherein said interface mechanism is embedded in said module and
3 communicates with said host on a bus.

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1 9. The self-booting software defined radio (SDR) module according to claim
2 1, wherein said front end comprises at least one radio frequency port, at least one
3 transceiver coupled to said radio frequency port.

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1 10. The self-booting software defined radio (SDR) module according to claim
2 1, wherein said host system is a cellular device, a laptop computer, a personal
3 digital assistant (PDA), and a mobile transportation processor.

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1 11. The self-booting software defined radio (SDR) module according to claim
2 1, further comprising at least one antenna switchably coupled to said front end unit.

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1 12. The self-booting software defined radio (SDR) module according to claim
2 1, wherein said module comprises at least partially reconfigurable logic devices
3 selected from the group comprising: field programmable gate array (FPGA),
4 programmable logic device (PLD).

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1 13. A software reconfigurable radio/wireless module employing SCA
2 architecture, comprising:
3 at least one processor unit;

4 at least one memory unit coupled to said processor unit by a control bus;
5 a plurality of reconfigurable elements;
6 an interface mechanism for transferring reconfiguration information from a
7 host device to said reconfigurable elements;
8 at least one radio frequency interface block; and
9 at least one multi-port reconfigurable crossbar switch with bi-directional
10 ports coupling to said radio frequency interface block and to said processor
11 unit.
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1 14. The software reconfigurable radio/wireless module according to claim, 12
2 wherein said radio frequency interface comprises at least one switchably coupled
3 antenna.
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1 15. The software reconfigurable radio/wireless module according to claim, 12
2 wherein said multi-port crossbar switch uses a serial digital interface.
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1 16. The software reconfigurable radio/wireless module according to claim, 12
2 wherein said reconfigurable elements comprise reconfigurable transceivers, .
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1 17. The software reconfigurable radio/wireless module according to claim, 12
2 wherein said multi-port crossbar switch uses a serial digital interface.
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1 18. A switched fabric software defined radio module, comprising:
2 at least two reconfigurable logic device on said module, wherein said
3 reconfigurable logic devices are each comprising:
4 a front end unit for transmission and reception of information
5 signals;
6 a processing unit;
7 a memory section;
8 a crossbar switch; and

9 a fabric interface, wherein said processing unit, said memory
10 section, and said crossbar switch are coupled to said fabric interface.

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1 19. The switched fabric software defined radio module according to claim 18,
2 wherein said crossbar switch is configured as a ring.

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1 20. The switched fabric software defined radio module according to claim 18,
2 wherein said devices further comprises an SCA run time kernel.

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